Space Weather Forecast

Issued on Tuesday 12 November 2024 at 01:16 Local

This forecast provides a four-day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Moderate solar activity is likely, with a slight chance of Strong class flares. Chance of G1/Minor Geomagnetic Storm intervals from 13 Nov.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity was Moderate with two Moderate-class flares from a large and complex sunspot region located in the southeast quadrant.

There are currently six sunspot regions on the Earth-facing disc. The sunspot region in the southeast is the largest and most complex region on the disc. It contains a number of mature spots with at least two delta spots, although one in the trailing region appears to be weakening. This region has seen minor growth in its leading portion, with small spots emerging ahead of its large mature spot. Another sunspot region in the southwest, has mature leading and trailing spots, and has seen some recent decay of its smaller spots within its intermediate portion. The remaining sunspot regions are stable and magnetically simple.

No Earth-directed CMEs (Coronal Mass Ejections) were observed.

Solar Wind / Geomagnetic Activity: Solar winds were indicative of on-going enhancement following likely coronal hole fast wind influence. Wind speeds were generally slightly elevated throughout, peaking around 450km/s, before gradually declining to background levels, just below 400km/s. The Interplanetary Magnetic Field was Weak. The north-south component was mostly southward (negative) directed and at Weak levels. The resultant geomagnetic Activity was generally Quiet to Unsettled (Kp1-3).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) was at background levels through the period.

Four-Day Space Weather Forecast Summary

Solar Activity: Moderate activity is forecast, with a likelihood of isolated Moderate class flares and a slight chance of Strong class flares, most probably from the complex sunspot in the east of the disk.

Solar Wind / Geomagnetic Activity: No Earth-directed CMEs are currently forecast. Fast wind influences are expected through this period, initially from a coronal hole in the southwest of the disc and later from the large coronal hole to the north, currently moving into the western

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hemisphere. Solar winds are expected to be at background levels on Day 1 (12 Nov), before becoming elevated again with a possible coronal hole fast wind from Day 2 (13 Nov).

Generally Quiet to Unsettled (Kp1-3) activity is forecast for Day 1 (12 Nov) as coronal hole influence eases. More Unsettled to Active (Kp3-4) conditions then expected from Day 2 (13 Nov) due to further coronal hole influences, with a slight chance of G1/Minor Geomagnetic Storm intervals (Kp5) during the remainder of the period.

Energetic Particles / Solar Radiation: The count rate of energetic particles (High energy protons) is at background levels. There is a rising slight chance of S1/Minor Proton Storms should we see any significant flares.

Geomagnetic Storms

Geomagnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	5	20	30	30
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X-Ray Flares

X-Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 (M Class)	Yes	70	70	70	70
Very Active	R3-R5 (X Class)	No	20	20	20	20

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Solar Radiation Storms (High Energy Protons)

Radiation Storms Probability (Exceedance)	Level ($cm^{-2}sr^{-1}s^{-1}$)	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	**≥ S1**	No	15	15	20	20
Very Active	**≥ S3 ***	No	1	1	1	1
* S3 ≥ 10 MeV ≥ 1000 pfu and/or 50 MeV ≥ 10pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)						

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